



## **Zeppelin NT - Measurement Platform for the Exploration of Atmospheric Chemistry and Dynamics in the Planetary Boundary Layer**

Andreas Hofzumahaus (1), Frank Holland (1), Andreas Oebel (1,3), Franz Rohrer (1), Thomas Mentel (1), Astrid Kiendler-Scharr (1), Andreas Wahner (1), Artur Brauchle (2), Klaus Steinlein (2), and Robert Gritzsch (2)

(1) Institut für Energie- und Klimaforschung: Troposphäre (IEK-8), Forschungszentrum Jülich, Jülich, Germany, (2) Zeppelin Luftschifftechnik GmbH & Co KG, Friedrichshafen, Germany, (3) Now at: Carl Zeiss SMS GmbH, Jena, Germany

The planetary boundary layer (PBL) is the chemically most active and complex part of the atmosphere where freshly emitted reactive trace gases, tropospheric radicals, atmospheric oxidation products and aerosols exhibit a large variability and spatial gradients. In order to investigate the chemical degradation of trace gases and the formation of secondary pollutants in the PBL, a commercial Zeppelin NT was modified to be used as an airborne measurement platform for chemical and physical observations with high spatial resolution.

The Zeppelin NT was developed by Zeppelin Luftschifftechnik (ZLT) and is operated by Deutsche Zeppelin Reederei (DZR) in Friedrichshafen, Germany. The modification was performed in cooperation between Forschungszentrum Jülich and ZLT. The airship has a length of 75 m, can lift about 1 ton of scientific payload and can be manoeuvred with high precision by propeller engines. The modified Zeppelin can carry measurement instruments mounted on a platform on top of the Zeppelin, or inside the gondola beneath the airship. Three different instrument packages were developed to investigate

- a. gas-phase oxidation processes involving free radicals (OH, HO<sub>2</sub>)
- b. formation of secondary organic aerosols (SOA)
- c. new particle formation (nucleation)

The presentation will describe the modified airship and provide an overview of its technical performance. Examples of its application during the recent PEGASOS flight campaigns in Europe will be given.